

## **Side rack rod for motor vehicle**

### **BACKGROUND OF THE INVENTION**

#### **Field of the Invention**

5 This invention relates to a side rack rod for motor vehicle which is installed on the sidewalls of a motor vehicle having a carrier, more particularly to a universal side rack rod that can fit different lengths and sizes of different models of motor vehicles.

#### **Description of the Related Art**

10 There are all kinds of vehicles, and the one having a driver seat and open carrier for passenger and cargo transportation is generally used. This kind of vehicles usually has side rack rods on the sidewalls of the carrier, and the structures of such motor vehicles were disclosed in the U.S. Patent Nos. 5,476,349, 5,618,140, 6,231,285, and 6,468,009.

15 The side rack rod of this sort usually has an anchor fixed onto both sides of the motor vehicle for receiving a rod body between the two anchors, and a bolt hole for tying a rope on the anchor.

20 Since the anchor needs to provide a bolt hole for tying ropes, therefore it is necessary to have a high intensity and firmness. For the design purpose, an anchor is usually made of a very short section of die-casting shaped component which comprises a curved rod body with a bolt hole and a flat fixed base, and the rod body passes through the fixed base and is mounted onto a stake on the sidewall of the vehicle carrier by screws.

25 Since the anchor is made of a solid body by die-casting shaping, and the load carried by the rope is taken into consideration, therefore its length needs to have a certain limitation. To cope with the different length of the structure for

the different brands and models of cars, a long and thin rod body is installed between two anchors for making the adjustment. However, there are about 8 different sizes and lengths for various car models, of which some are large and some are small. Side rack rod manufacturers have to manufacture and put 8 sets of different sized side rack rods on the selves for sale. In the meantime, they have to maintain the inventory of 8 different sizes of goods. Since the side rack rod is very long and made of stainless steel, therefore it does not only cause a huge storage space and a high cost, but also seriously takes up the precious space of the seller and makes the seller unwilling to put the merchandise on the shelf for selling one of the 8 sets of different sized side rack rods to a single consumer.

On the other hand, since there are ropes and bolts are developed and sold in the market, such as those disclosed in the U.S. Patent Nos. 5,004,388 and 5,106,248, therefore the side rack rod required by consumer no longer needs to have the function of tying a rope. Therefore, it is a subject for the research and development to popularize a universal side rack rod that can fit different sizes.

## Summary of the Invention

The objective of this invention is to provide an improved side rack rod for motor vehicle, which includes a straight tubular pipe section, a curved pipe section each disposed on both ends of the straight tubular pipe section, a fixed  
5 base disposed under the curved pipe section, a long groove hole each disposed on the fixed base, such that the maximum and minimum distances between two long groove holes can accommodate a range of different sizes.

To make it easier for our examiner to understand the objective of the invention, its structure, innovative features, and performance, we use a  
10 preferred embodiment together with the attached drawings for the detailed description of the invention.

## **BRIEF DESCRIPTION OF THE DRAWINGS**

Other features and advantages of the present invention will become apparent in the following detailed description of the preferred embodiments with reference to the accompanying drawings, in which:

5           FIG. 1 is an illustrative diagram of the structure of the first preferred embodiment of the present invention.

FIG. 2 is a top view of FIG. 1.

FIG. 3 is an illustrative diagram of the disassembled parts of the structure of the second preferred embodiment of the present invention.

10          FIG. 4 is the top view of FIG. 3.

## DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the detailed description of the preferred embodiments, it should be noted that like elements are indicated by the same reference numerals throughout the disclosure.

5 Referring to FIGS.1 and 2, the side rack rod according to the first preferred embodiments of this invention comprises: a straight tubular pipe section 11; a curved pipe section 12, respectively disposed on both ends of the straight tubular pipe section 11; a fixed base 13 in the shape of a flat board soldered under each curved pipe section 12; a long groove long 14 each  
10 disposed on the fixed base 13; such that the interior of the straight pipe section 11 and the curved pipe section 12 are hollow and interconnected. Different brands and models of motor vehicle are taken into the consideration for making the maximum and minimum distance between two long groove holes to fit a range of various sizes of the carrier.

15 Referring to FIGS. 3 and 4, the second preferred embodiment of this invention is applied to the carrier of certain specific branded vehicles, which have a carrier length different from the carrier of most vehicles. Then, it will provide a side rack rod 2 including two corresponding anchors 21, each anchor includes a straight pipe section 22 and a curved pipe section 23 on both ends of  
20 the straight pipe section 22. A fixed base 24 in the shape of a flat board is soldered under each curved pipe section 23, and a long groove hole 25 is disposed on the fixed base 24. A sleeve 26 is disposed between two anchors 21, and the diameter of the sleeve 26 is approximately equal to the diameter of the straight pipe 22, but both ends of an embedding section 27 each has a tapered  
25 pipe with smaller diameter at an appropriate distance apart to be embedded on both sides and engaged into the internal diameter of the straight pipe section 22. The length of the straight pipe section 22 is larger than that of the sleeve 26, and the interiors of the sleeve 26, straight pipe section 22, and curved pipe section 12

are hollow and interconnected. The sleeve 26 allows the length of the overall side rack rod 2 to be extended to a range for other different car models and sizes. Within the range of similar sizes, the nearest and farthest distance between two long groove holes can fit a range of various similar sizes.

5       The side rack rod according to the first preferred embodiment of this invention is applicable to the present popular 72.25-inch, 71.00-inch, 73.25-inch, and 73.625-inch side rack rods, and the different between the longest and the shortest lengths is only 2.625 inches. By means of adjusting the securing point at a position of the nearest distance and the farthest distance between the two  
10       long groove holes to fit the range among 4 different similar sizes.

      The design of the second preferred embodiment of the present invention fits the current common side rack rods of eight different lengths within the first size range (72.25-inch, 71.00-inch, 73.25-inch, and 73.625-inch), the second size range (69.875-inch, 68.25-inch, and 70.375-inch), and the third size range  
15       (63.625-inch). Provided that the lengths of the anchors 21 on both sides are fixed and equal, the sleeves 26 of 3 different lengths are made to fit all of the foregoing 8 kinds of side rack rods within the three size ranges. The size within the same size range can be adjusted by the distance between the two long groove holes 25. Only two anchors 21 and three sleeves of different lengths  
20       packed into a packaging carton or bag of the two side rack rods (for both sides of the carrier of a vehicle) are put on the shelf for sale. It supplies a side rack rod for the car owners of eight different car models, and the space occupied on the shelf and in the warehouse is only one-eighth of the prior art. The present invention is very useful. In the practical product design for the three different  
25       sizes of sleeves 26, the longest one is about 9.06 inches only (about 23 cm), and the shortest is about 1.18 inches only (about 3 cm). Compared with the prior art requiring to manufacture 8 different sizes of side rack rods, the present invention can greatly save costs.

      While the present invention has been described in connection with what is

considered the most practical and preferred embodiment, it is understood that the invention is not limited to the disclosed embodiments but is intended to cover various arrangements included within the spirit and scope of the broadest interpretation and equivalent arrangements.